Remarks

Claims 69-120 are pending in the above-captioned patent application following this amendment. Claims 1-7, 9-21, 23-35 and 37-68 were rejected. Claims 8, 22 and 36 were withdrawn from consideration by the Patent Office. Claims 69-120 have been added for the purpose of expediting the patent application process in a manner consistent with the goals of the Patent Office pursuant to 65 Fed. Reg. 54603 (September 8, 2000), even though the Applicant believes that the previously pending claims were allowable. This amendment and response is filed concurrently with a Request for Continued Examination.

Support for the new claims can be found throughout the originally filed application, including the originally filed claims, the drawings and the specification. More specifically, support for new claims 69-103 can be found at least in previously pending claims 1-68, in Figures 2A-2C, 3 and 4, and the specification at page 7, line 3 through page 17, line 17.

No new matter has been added by this amendment. Consideration of the Application is respectfully requested.

Rejections Under 35 U.S.C. § 102

Claims 1-5, 9-19, 23-35, 37-38, 41-52, 55, 59-61 and 64-66 are rejected under 35 U.S.C. § 102(b) as being anticipated by Wasson (US 5,295,031). The Applicants have canceled claims 1-5, 9-19, 23-35, 37-38 and 41-52, 55, 59-61 and 64-66 without prejudice by this amendment. Therefore, the rejection by the Patent Office is believed to be moot.

Rejections Under 35 U.S.C. § 103

Claims 6, 7, 20, 21, 39, 40, 52, 54, 57, 58, 62, 63 and 68 are rejected under 35 U.S.C. § 103 are being unpatentable over Wasson in view of Aruga et al. (US 5,764,441). Further, claims 56 and 67 are rejected under 35 U.S.C. § 103 are being unpatentable over Wasson in view of Miyamoto et al. (US 6,225,712). The Applicants have canceled claims 6, 7, 20, 21, 39, 40, 52, 54, 56-58, 62, 63, 67 and 68 without prejudice by this amendment. Therefore, the rejection by the Patent Office is believed to be moot.

New Claims

New claims 69-120 have been added by this amendment. New claims 69-120

are of a slightly different scope than the previously pending claims. Therefore, in view of the cited references, claims 69-120 are believed to be allowable.

Wasson is directed toward a rotary positioning apparatus having different designs to achieve a pure torque couple, as illustrated in Figure 1. (Col. 5, lines 42-59; Fig. 1). Each of the designs disclosed in Wasson include a conductor and magnet assembly that when energized, attempt to provide a total net force of zero. (See Figures 21-29C). This "zero net force" (by definition) cannot oppose a resultant force at the actuator hub that is caused at least partially by a lack of complete rigidity of portions of the disk drive.

Further, Wasson does not even identify or address a resultant force at the actuator hub, including the direction and/or magnitude of such resultant force. Importantly, Wasson does not teach or suggest opposing any such resultant force using a net force generated by the coils, because no specific resultant force is described or illustrated in Wasson. Thus, Wasson does not teach or suggest that this particular force (or any force generated by the coils) at least partially offsets a resultant force at the actuator hub. In fact, Wasson appears to teach to the contrary.

More specifically, Wasson discusses "unwanted vectors" indicated by a', b' and c' in Figure 20, which shows the torque deriving vectors with the geometry shown in Figure 19. (Col. 12, lines 65-67). "These unwanted vectors, while being of small enough extent to provide for an effective device, preferable are to be avoided inasmuch as they are seen to be additive and may create a torque of direction opposite that desired." (Col. 13, lines 12-19; emphasis added). Thus, even if a resultant force were disclosed by Wasson (which Applicants dispute), the small vectors would not oppose the resultant force, but would add to it.

Aruga et al. is directed toward a head actuator 10 that includes two coils that each generates a force. These forces combine to drive rotation of the head actuator to move a read/write head. The net force from these combined forces is not in a direction that is opposite the resultant force at the actuator hub. (See Figures 4 and 6 - adding to resultant force; Figures 10 and 11 – net force of zero, which does not oppose resultant force).

Miyamoto et al. is directed toward a voice coil motor having two non-coplanar

coils. A control system independently directs current to each of the coils to switch the direction of current to the coils. (Col. 10, lines 39-62).

In contrast to the cited references, new claim 69 is directed toward a disk drive that requires "a storage disk having a plurality of tracks; a data transducer; an actuator assembly that supports the data transducer over one of the tracks, the actuator assembly having a rotatable actuator hub and a longitudinal axis, the actuator hub being subjected to a resultant force caused at least partially by a lack of complete rigidity of portions of the disk drive, the resultant force urging the data transducer in an off-track direction; and a positioner that moves the actuator assembly relative to the storage disk, the positioner including (i) a magnet assembly that generates a magnetic field, and (ii) a conductor assembly that cooperates with the magnet assembly to rotate the actuator hub and to generate a net force in a direction that is substantially opposite the resultant force." These features are not taught or suggested by the cited references. Thus, claim 69 is believed to be allowable. Because claims 70-78 depend directly or indirectly from claim 69, they are also believed to be allowable.

New claim 79 requires "a storage disk having a plurality of tracks; a data transducer; an actuator assembly that supports the data transducer over one of the tracks, the actuator assembly having a rotatable actuator hub and a longitudinal axis, the actuator hub being subjected to a resultant force caused at least partially by a lack of complete rigidity of portions of the disk drive, the resultant force being in a direction that is substantially perpendicular to the longitudinal axis; and a positioner that moves the actuator assembly relative to the storage disk, the positioner including (i) a magnet assembly that generates a magnetic field, and (ii) a conductor assembly that cooperates with the magnet assembly to generate a net force in a direction that is substantially opposite the resultant force to at least partially cancel the resultant force." These features are not taught or suggested by the cited references. Thus, claim 79 is believed to be allowable. Because claims 80-89 depend directly or indirectly from claim 79, they are also believed to be allowable.

New claim 90 is directed toward a method that requires the steps of "supporting the data transducer with an actuator assembly having a rotatable actuator hub and a longitudinal axis, the actuator hub being subjected to a resultant force caused at least

partially by a lack of complete rigidity of portions of the disk drive, the resultant force urging the data transducer in an off-track direction; positioning the actuator assembly by rotating the actuator hub with a positioner that includes (i) a magnet assembly that generates a magnetic field, and (ii) a conductor assembly that cooperates with the magnet assembly; and generating a net force with the positioner, the net force being in a direction that is substantially opposite the resultant force." These steps are not taught or suggested by the cited references. Thus, claim 90 is believed to be allowable. Because claims 91-96 depend directly or indirectly from claim 90, they are also believed to be allowable.

New claim 97 requires the steps of "supporting the data transducer with an actuator assembly having a rotatable actuator hub and a longitudinal axis, the actuator hub being subjected to a resultant force caused at least partially by a lack of complete rigidity of portions of the disk drive, the resultant force being in a direction that is substantially perpendicular to the longitudinal axis; moving the actuator assembly by rotating the actuator hub with a positioner having (i) a magnet assembly that generates a magnetic field, and (ii) a conductor assembly that cooperates with the magnet assembly; and partially canceling the resultant force by generating a net force with the positioner, the net force being in a direction that is substantially opposite the resultant force." These steps are not taught or suggested by the cited references. Thus, claim 97 is believed to be allowable. Because claims 98-103 depend directly or indirectly from claim 97, they are also believed to be allowable.

New claim 104 is directed toward a disk drive that requires "a storage disk having a plurality of tracks; a data transducer; an actuator assembly that supports the data transducer over one of the tracks, the actuator assembly having a rotatable actuator hub and a longitudinal axis, the actuator hub being subjected to a resultant force caused at least partially by a lack of complete rigidity of portions of the disk drive, the resultant force urging the data transducer in an off-track direction; and a positioner that moves the actuator assembly relative to the storage disk, the positioner including (i) a magnet assembly that generates a magnetic field, and (ii) a conductor assembly that cooperates with the magnet assembly to rotate the actuator hub, the conductor assembly including a first coil and a second coil, the first coil generating a first force that is directed at an

angle having an absolute value that is greater than zero degrees and less than approximately 45 degrees relative to the longitudinal axis, the conductor assembly generating a net force that at least partially opposes the resultant force." These features are not taught or suggested by the cited references. Thus, claim 104 is believed to be allowable. Because claims 105-112 depend directly or indirectly from claim 104, they are also believed to be allowable.

New claim 113 is directed toward a method that requires the steps of "supporting the data transducer with an actuator assembly having a rotatable actuator hub and a longitudinal axis, the actuator hub being subjected to a resultant force caused at least partially by a lack of complete rigidity of portions of the disk drive, the resultant force urging the data transducer in an off-track direction; positioning the actuator assembly by rotating the actuator hub with a positioner that includes (i) a magnet assembly that generates a magnetic field, and (ii) a conductor assembly that cooperates with the magnet assembly; generating a first force with a first coil of the conductor assembly, the first force being directed at an angle having an absolute value that is greater than zero degrees and less than approximately 45 degrees relative to the longitudinal axis; and generating a net force with the positioner, the net force being in a direction that is substantially opposite the resultant force." These steps are not taught or suggested by the cited references. Thus, claim 113 is believed to be allowable. Because claims 114-120 depend directly or indirectly from claim 113, they are also believed to be allowable.

Conclusion

In conclusion, Applicant respectfully asserts that claims 69-120 are allowable for the reasons set forth above, and that the application is now in a condition for allowance. Accordingly, an early notice of allowance is respectfully requested. The Examiner is requested to call the undersigned at 858-487-4077 for any reason that would advance the instant application to issue.

Dated this the 4th day of January, 2006.

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